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(54) Title: DEFINITIVE ENDODERM

Step-wise β-cell differentiation

Activins **Nodals Pancreatic** ES cell **Endocrine** Beta-cell Endoderm endoderm OCT4 SOX17

NANOG BRACHYURY REX1 MIXL1

TGF_B family

GATA4 HNF3b MIXL1 CXCR4

(57) Abstract: Disclosed herein are cell cultures comprising definitive endoderm cells and methods of producing the same. Also disclosed herein are cell populations comprising substantially purified definitive endoderm cells as well as methods for enriching, isolating and purifying definitive endoderm cells from other cell types.